# SBC83810 Series

## Pentium® M All-in-One
## Petit Board
## with DualView display and SATA supported

**User's Manual**

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## ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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# Chapter 1
# Introduction

The **SBC83810VEA** is an Intel® Pentium® M/Celeron™ M CPU equipped Petit board with graphics, Fast Ethernet and audio interface. Designed with the space-limited applications in mind, the **SBC83810VEA** is practically the finest embedded Pentium® M board that exists. Using a standardized format conforming to the size of a 5.25" CD-ROM drive, **SBC83810 Series** adapt an Intel® low power consumption Pentium® M microprocessors. To simplify system integration, it packs provisions such as super I/Os, XVGA, LCD, Ethernet, solid state disk, all on a single board. Unique embedded features such as 4 serial ports (3 x RS-232, 1 x RS-232/422/485) with +5V/12V power capability and that allow adoption of an extensive array of PC peripherals. The industrial-grade construction of **SBC83810 series** allows your system to endure the continuous operation in hostile environments where stability and reliability are basic requirements. System dependability of **SBC83810 series** are enhanced by its built-in watchdog timer, a special industrial feature not commonly seen on other motherboards.

Designed for the professional embedded developers, the Pentium® M embedded board **SBC83810 Series** is virtually the ultimate one-step solution for embedded system applications.

## 1.1 Specifications

- **CPU:** Intel® Pentium® M and Celeron® M
- **System Chipset:** Intel® 855GME/852GM + 6300ESB
- **Bus Clock:** 400 MHz
- **BIOS:**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - RPL/PXE Ethernet Boot ROM
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory:**
  - One 184-pin DIMM socket
  - 200/266/333MHz ECC/non-ECC DDR SDRAM supported
  - Maximum SDRAM of up to 1GB
- **L2 Cache:** integrated in CPU
- **Onboard IDE:**
  - 4 channels up to 6 devices (2 parallel ATA-100 and 2 serial ATA-150)
  - RATA-100 as PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100
- **Onboard Serial ATA:**
  - Independent DMA operation on two ports.
  - Data transfer rate up to 150 Mbyte/s
  - Altemate Device IDE and RAID Class Code option for support of Soft RAID.
- **Compact Flash Socket:**
  - IDE1 support Compact Flash type-II Socket jumper selectable as Master or Slave and DMA mode supported
  - Power is 5V (default) or 3.3V (Option).

- **Onboard Multi I/O:**
  - One floppy port supporting up to two devices (LS-120 & ZIP Bootable)
  - One SPP/EPP/ECP parallel port; supports LS-120
  - Four 16550 UART-compatible serial ports with +5V/+12V power output in Pin 1 or Pin 9 via DIP jumper setting.
    3 x RS-232
    1 x RS-232/422/485 and selectable via jumper setting and auto flow control supported
  - 1 x IrDA for wireless communication
- **USB Interface:** 4 USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Real Time Clock:** Integrate Intel® 6300ESB
- **Watchdog Timer:**
  - Integrate **Intel®** 6300ESB
  - Up to 1024 levels as Reset/SMI features
- **Board Unique ID:**
  - Dallas DS2401 board unique ID supported for customized application
- **Hardware Monitoring:**
  - Integrate Winbond W83627HF Super I/O.
  - Monitoring for CPU/System temperatures, System Voltage and Chassis/CPU Fan speeds
- **Graphics/Streaming:**
  - Integrate **Intel®** 855GME/852GM GMCH
  - Unified Memory Architecture shares system memory up to 256MB
  - Single display mode maximum resolutions:
    - CRT: 1600 x 1200
    - LVDS LCD: 1280 x 1024
  - DualView display mode:
    - CRT: 1600 x 1200
    - LVDS LCD: 1280 x 1024
  - LCD backlight control supported
  - Optional Dual LVDS LCD via Chrontel CH7305 converter

- **Ethernet:**
  - Realtek 8100C PCI Bus 10/100M Base-T
  - Wake On LAN (via ATX power supply)
  - Equipped with RJ-45 interface
  - Optional with Realtek RTL8110S for 10/100/1000Base-T
- **Audio:**
  - Realtek ALC202A AC'97 codec audio
  - Amplify for speaker-out with 2.5W for each channel
  - MIC-in, Line-in, Line-out/Speaker-out (jumper selectable)
- **Expansion Slots:**
  - One 32-bit PC/104 Plus connector for 3 Masters and 1 slave expansion
  - One PCI-X slot for default 2 PCI-X expansion (optional up to 4 masters support)
  - One Mini-PCI type-III Socket
- **Power Management:** ACPI (Advanced Configuration and Power Interface)
- **Form Factor:** 5.25" CD-ROM drive form factor
- **Dimensions:** 203.20 x 146.05 $mm^2$

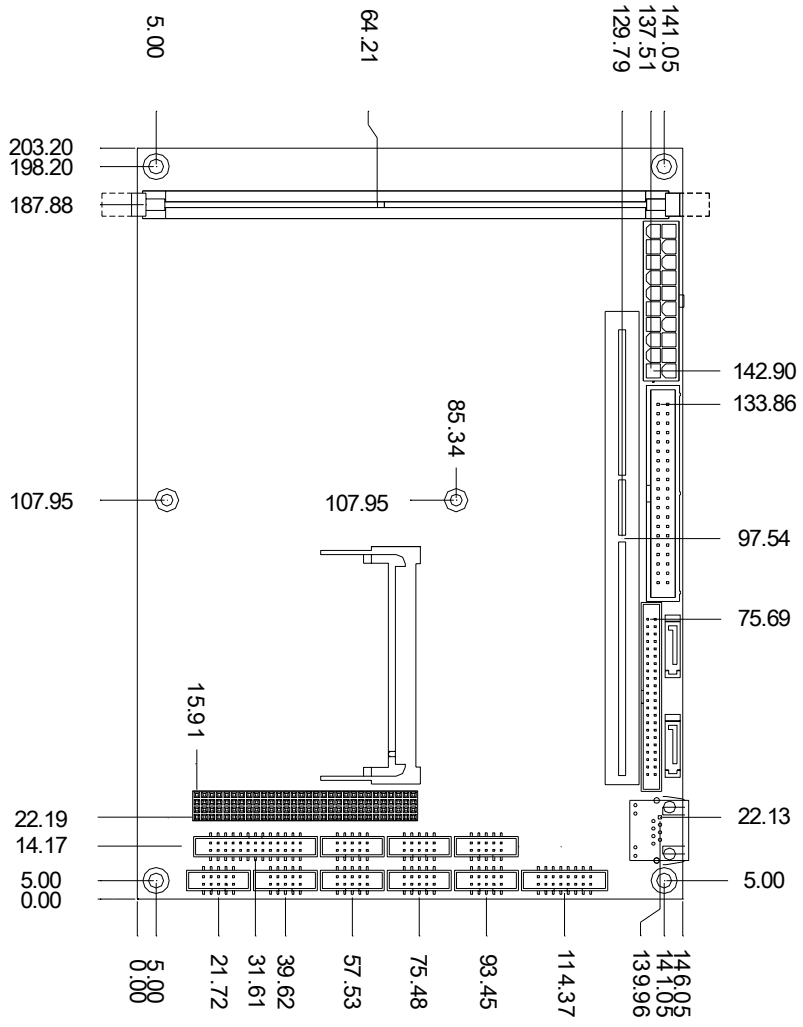
**NOTE:** *Specifications are subject to change without notice.*

## 1.2 Utilities Supported

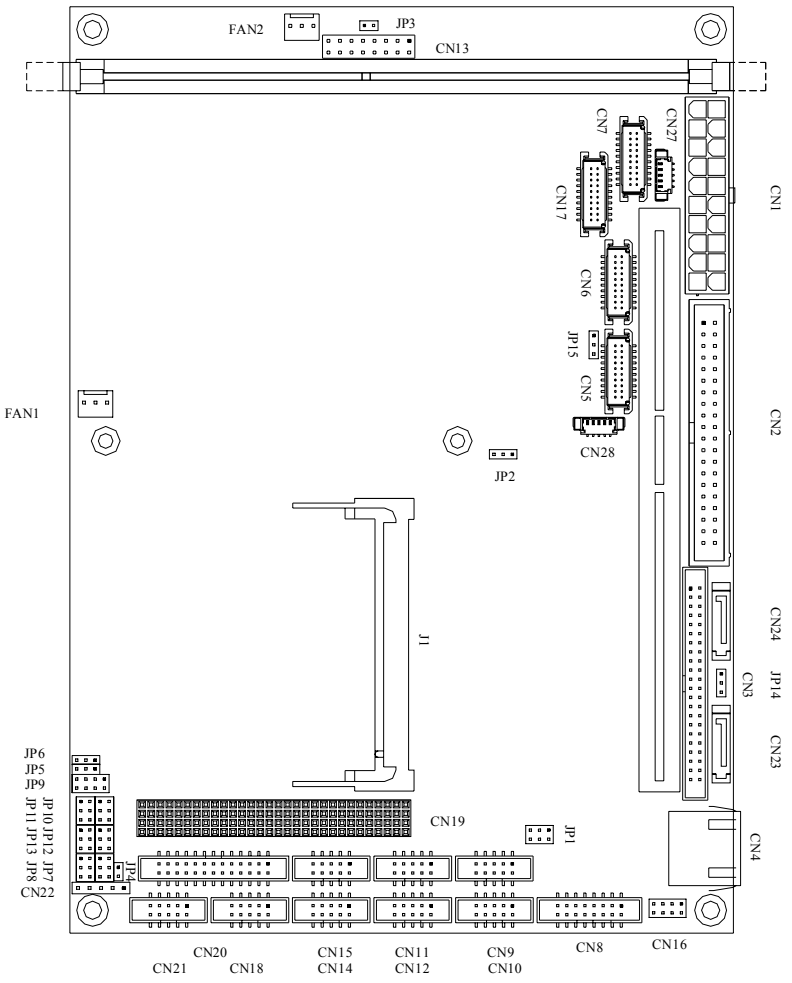
- Chipset Driver
- Ethernet Driver
- VGA Drivers
- Audio Drivers

# Chapter 2
# Jumpers and Connectors

## 2.1 Board Layout and Fixing Holes



## 2.2 Placement



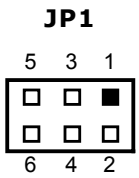
## 2.3 Jumper Settings

The **SBC83810 Series** is configured to match the needs of your application with the proper jumper settings. The table below is a summary of all the jumpers and their corresponding functions onboard the **SBC83810 Series**. The succeeding tables show the correct jumper settings for the onboard devices.

| Jumper | Default Setting | | Jumper Setting |
|---|---|---|---|
| JP1 | Audio Line Out/Speaker Out: Line Out | | Short 1-3, 2-4 |
| JP2 | Clear CMOS Setting: Normal | | Short 1-2 |
| JP3 | Watchdog Trigger : Disabled | | Open |
| JP4 | Compact Flash Setting: Slave | | Open |
| JP5 | VCCM of CN7/CN17 Voltage select:3.3V | | Short 1-2 |
| JP6 | Compact Flash Power Select: 3.3V | | Short 1-2 |
| JP7 | COM3 Mode Select | CN21 Pin 1: DCD | Short 3-5 |
| | | CN21 Pin 8: RI | Short 4-6 |
| JP8 | COM1 Mode Select | CN14 Pin 1: DCD | Short 3-5 |
| | | CN14 Pin 8: RI | Short 4-6 |
| JP9 | COM2 Mode Select: RS-232 | | Short 1-2 |
| JP10 | COM2 Mode Select: RS-232 | | Short 3-5,4-6 |
| JP11 | COM2 Mode Select: RS-232 | | Short 3-5,4-6 |
| JP12 | COM4 Mode Select | CN15 Pin 1: DCD | Short 7-9 |
| | | CN15 Pin 8: RI | Short 8-10 |
| JP13 | COM2 Mode Select | CN18 Pin 1: DCD | Short 7-9 |
| | | CN18 Pin 8: RI | Short 8-10 |
| JP14 | PCI Slot VIO Select: 3.3V | | Short 1-2 |
| JP15 | VCCM of CN5/CN6 Voltage select:3.3V | | Short 1-2 |

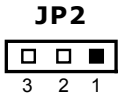
### 2.3.1 Audio Output Select Jumper: JP1

| Options | Settings |
|---|---|
| Line Out | Short 1-3, 2-4 (default) |
| Speaker Out | Short 3-5, 4-6 |




### 2.3.2 CMOS Clear Jumper: JP2

| Options | Settings |
|---|---|
| Normal | Short 1-2 (default) |
| Clear CMOS | Short 2-3 |




### 2.3.3 Watchdog Enable: JP3

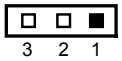
| Options | Settings |
|---|---|
| Disable | Open |
| Enable | Short |

### 2.3.4 CompactFlash Setting: JP4

| Options | Settings |
|---|---|
| Slave | Open |
| Master | Short |

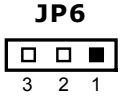
### 2.3.5 VCCM of CN7/CN17 Voltage: JP5

| Options | Settings |
|---|---|
| 3.3V | Short 1-2 |
| 5V | Short 2-3 |




### 2.3.6 Compact Flash Power: JP6

| Options | Settings |
|---|---|
| 3.3V | Short 1-2 |
| 5V | Short 2-3 |



### 2.3.7 PCI-X Slot VIO power: JP14

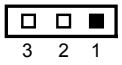
| Options | Settings |
|---|---|
| 3.3V | Short 1-2 |
| 5V | Short 2-3 |

JP14

### 2.3.8 VCCM of CN5/CN6 Voltage: JP15

| Options | Settings |
|---|---|
| 3.3V | Short 1-2 |
| 5V | Short 2-3 |

JP15




### 2.3.9 COM1~COM4 Mode for Power:

| COM1(CN14) | JP8 |
|---|---|
| Pin 1=5V | Short 1-3 |
| *Pin 1=DCD | Short 3-5 |
| Pin 8=12V | Short 2-4 |
| *Pin 8=RI | Short 4-6 |

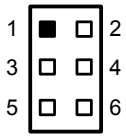
| COM2(CN18) | JP13 |
|---|---|
| Pin 1=5V | Short 1-3 |
| *Pin 1=DCD | Short 3-5 |
| Pin 8=12V | Short 2-4 |
| *Pin 8=RI | Short 4-6 |

| COM3(CN21) | JP7 |
|---|---|
| Pin 1=5V | Short 1-3 |
| *Pin 1=DCD | Short 3-5 |
| Pin 8=12V | Short 2-4 |
| *Pin 8=RI | Short 4-6 |

| COM4(CN15) | JP12 |
|---|---|
| Pin 1=5V | Short 1-3 |
| *Pin 1=DCD | Short 3-5 |
| Pin 8=12V | Short 2-4 |
| *Pin 8=RI | Short 4-6 |

***: Default settings***

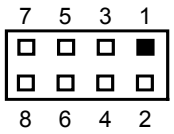
JP7/8/12/13



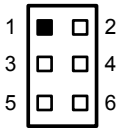
### 2.3.10 COM2 Mode Select for Type:

| COM2 | JP9 | JP10 | JP11 |
|---|---|---|---|
| RS-232 (default) | 1-2 | 3-5, 4-6 | 3-5, 4-6 |
| RS-422 | 3-4, 7-8 | 1-3, 2-4 | 1-3, 2-4 |
| RS-485 | 5-6, 7-8 | 1-3, 2-4 | 1-3, 2-4 |

**JP9**




**JP10/JP11**




### 2.3.11 CompactFlash Setting: JP4

| Options | Settings |
|---|---|
| Slave | Open(default) |
| Master | Short 1-2 |

## 2.4 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered by your system may be a result from loose or improper connections. Ensure that all connectors are in place and firmly attached. The following table lists the function of each connector on the **SBC83810 Series**. Their corresponding pin assignments are described in Chapter 3.

| Connectors | Label | Connectors | Label |
|---|---|---|---|
| ATX Power Connector | CN1 | LAN LED Connector | CN16 |
| 40-pin IDE2 Connector | CN2 | Ch2 of LVDS1 Connector | CN17 |
| 44-pin IDE1 Connector | CN3 | COM2 Connector | CN18 |
| LAN Connector | CN4 | PC104 Plus Connector | CN19 |
| Ch1 of LVDS2 Connector | CN5 | LPT1 Connector | CN20 |
| Ch2 of LVDS2 Connector | CN6 | COM3 Connector | CN21 |
| Ch1 of LVDS1 Connector | CN7 | IR Connector | CN22 |
| VGA Connector | CN8 | SATA0 Connector | CN23 |
| Audio connector | CN9 | SATA1 Connector | CN24 |
| K/B & M/S Connector | CN10 | FDD Connector | CN25 |
| USB2/3 Connector | CN11 | Compact Flash Socket | CN26 |
| USB0/1 Connector | CN12 | Inverter Connector for LVDS1 | CN27 |
| Front Panel Bezel Connector | CN13 | Inverter Connector for LVDS2 | CN28 |
| COM1 Connector | CN14 | Mini-PCI Socket | J1 |
| COM4 Connector | CN15 | PCI-X Slot | PCI1 |

This page does not contain any information.

# Chapter 3
# Hardware Description

## 3.1 Microprocessors

The **SBC83810 Series** supports Intel® Celeron™ M and Pentium® M CPUs. Systems based on these CPUs can be operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor installed onboard. Make sure all settings are correct for the installed microprocessor to prevent any damage to the CPU.

## 3.2 BIOS

System BIOS used on the **SBC83810 Series** is Phoenix-Award Plug and Play BIOS. The **SBC83810 Series** contains a single 4Mbit Flash.

## 3.3 System Memory

The **SBC83810 Series** industrial CPU card supports one 184-pin DDR DIMM socket for a maximum memory of 1GB DDR SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB and 1GB.

## 3.4 I/O Port Address Map

The Intel® Pentium® M/Celeron™ M CPU communicates via I/O ports. It has a total of 1KB port addresses available for assignment to other devices via I/O expansion cards.

| Address | Devices |
|---|---|
| 000-01F | DMA controller #1 |
| 020-03F | Interrupt controller #1 |
| 040-05F | Timer |
| 060-06F | Keyboard controller |
| 070-07F | Real time clock, NMI |
| 080-09F | DMA page register |
| 0A0-0BF | Interrupt controller #2 |
| 0C0-0DF | DMA controller #2 |
| 0F0 | Clear math coprocessor busy signal |
| 0F1 | Reset math coprocessor |
| 0F8-0FF | Math processor |
| 1F0-1F8 | Fixed disk controller |
| 250-25F | HR I/O |
| 300-31F | Prototype card |
| 380-38F | SDLC #2 |
| 3A0-3AF | SDLC #1 |
| 3B0-3BF | MDA video card (including LPT1) |
| 3C0-3CF | EGA card |
| 3D0-3DF | CGA card |
| 3F0-3F7 | Floppy disk controller |
| 3F8-3FF | Serial port #1 (COM1) |
| 3E8-3EF | Serial port #3 (COM3) |
| 2F8-2FF | Serial port #2 (COM2) |
| 2E8-2EF | Serial port #4 (COM4) |
| 3F0-3FF | Super I/O |

## 3.5 Interrupt Controller

The **SBC83810 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines. Four out of the sixteen can either be programmable. The mapping list of the 16 interrupt request lines is shown on the following table.

| NMI | Parity check error |
|---|---|
| IRQ0 | System timer output |
| IRQ1 | Keyboard |
| IRQ2 | Interrupt rerouting from IRQ8 through IRQ15 |
| IRQ3 | Serial port #2 |
| IRQ4 | Serial port #1 |
| IRQ5 | Reserved |
| IRQ6 | Floppy disk controller |
| IRQ7 | Parallel port #1 |
| IRQ8 | Real time clock |
| IRQ9 | Reserved |
| IRQ10 | Serial port #3 |
| IRQ11 | Serial port #4 |
| IRQ12 | PS/2 Mouse |
| IRQ13 | Math coprocessor |
| IRQ14 | Primary IDE channel |
| IRQ15 | Secondary IDE Channel |

## 3.6 IDE Interface Connector

The built-in 4 channels of IDE (2 parallel ATA-100 and 2 serial ATA-150) support up to 6 IDE devices; master/slave mode for parallel ATA-100 and post write transaction mechanisms with 64-byte buffer, and master data transaction. **CN3** is a 44-pin IDE interface connector for standard 2.5" IDE device. **CN2** is a 40-pin IDE interface connector for standard 3.5" IDE device. **CN23** and **CN24** are the serial ATA-150 IDE interfaces currently support the hard disk drives.

### CN3: IDE Connector Pin Assignment

| Pin | Description | Pin | Description | Pin | Description |
|---|---|---|---|---|---|
| 1 | Reset # | 2 | GND | 3 | Data 7 |
| 4 | Data 8 | 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 | 9 | Data 4 |
| 10 | Data 11 | 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 | 15 | Data 1 |
| 16 | Data 14 | 17 | Data 0 | 18 | Data 15 |
| 19 | GND | 20 | No connector | 21 | No connector |
| 22 | GND | 23 | IOW # | 24 | GND |
| 25 | IOR # | 26 | GND | 27 | IOCHRDY |
| 28 | No connector | 29 | No connector | 30 | GND-Default |
| 31 | Interrupt | 32 | No connector | 33 | SA1 |
| 34 | No connector | 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0 # | 38 | HDC CSI # | 39 | HDD Active # |
| 40 | GND | 41 | Vcc | 42 | Vcc |
| 43 | GND | 44 | No connector | | |

## CN2: 40-pin IDE Connector Pin Assignment

| Pin | Description | Pin | Description | Pin | Description |
|---|---|---|---|---|---|
| 1 | Reset # | 2 | GND | 3 | Data 7 |
| 4 | Data 8 | 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 | 9 | Data 4 |
| 10 | Data 11 | 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 | 15 | Data 1 |
| 16 | Data 14 | 17 | Data 0 | 18 | Data 15 |
| 19 | GND | 20 | No connector | 21 | No connector |
| 22 | GND | 23 | IOW # | 24 | GND |
| 25 | IOR # | 26 | GND | 27 | IOCHRDY |
| 28 | No connector | 29 | No connector | 30 | GND-Default |
| 31 | Interrupt | 32 | No connector | 33 | SA1 |
| 34 | No connector | 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0 # | 38 | HDC CSI # | 39 | HDD Active # |
| 40 | GND | | | | |

## CN23/24: 7-pin SATA Connector Pin Assignment

| PIN | Description |
|---|---|
| 1 | GND |
| 2 | TX+ |
| 3 | TX- |
| 4 | GND |
| 5 | RX- |
| 6 | RX+ |
| 7 | GND |

# 3.7 Display Interface

## 3.7.1 Graphic Controller

The 855GME provides a highly integrated graphics accelerator delivering high performance 2D, 3D, and video capabilities. With its interfaces to UMA using a DVMT configuration, an analog display (CRT port), a LVDS port for digital LCD connection and optional second LVDS LCD interface (via Chrontel CH7305 converter), the 855GME can provide a complete graphics solution. The 855GME also provides 2D hardware acceleration for block transfers of data (BLTs). Performing these common tasks in hardware reduces CPU load, and thus improves performance. High bandwidth access to data is provided through the system memory interface. The 855GME uses Tiling architecture to increase system memory efficiency and thus maximize effective rendering bandwidth. The Intel 855GME GMCH improves 3D performance and quality with 3D Zone rendering technology. The Intel 855GME GMCH also supports Video Mixer rendering and Bi-Cubic filtering.

## 3.7.2 Features

- The SBC83810 adapts Intel 855GME GMCH provides three display ports, one analog and two digital. With these interfaces, the GMCH can support for a progressive scan analog monitor, a dedicated single/dual channel LVDS LCD panel and a converted LVDS LCD interface through DVO channel. Each port can transmit data according to one or more protocols. The data that is sent out the display port is selected from one of the two possible sources, Pipe A or Pipe B.
- Intel 855GME GMCH has an integrated 350-MHz, 24-bit RAMDAC that can directly drive a progressive scan analog monitor pixel resolution up to 1600x1200 at 85-Hz refresh and up to 2048x1536 at 75-Hz refresh. The Analog display port can be driven by Pipe A or Pipe B.

- The Intel 855GME GMCH have an integrated dual channel LFP Transmitter interface to support LVDS LCD panel resolutions up to UXGA. The display pipe provides panel up-scaling to fit a smaller source image onto a specific native panel size, as well as provides panning and centering support. The LVDS port is only supported on Pipe B. The LVDS port can only be driven by Pipe B, either independently or simultaneously with the Analog Display port. Spread Spectrum Clocking is supported: center and down spread support of 0.5%, 1%, and 2.5% utilizing an external SSC clock.

### 3.7.3 VGA/Flat Panel Connectors

The **SBC83810 Series** has one connector that supports CRT/ VGA. **CN8** is a SMD 16 Pin header connector used for the CRT VGA display, and **CN7 & CN17** are Hirose DF-13 20pin connector for LVDS Interface LCD. **CN7** for Channel 1, **CN17** for channel 2.**CN12** is inverter connector for LCD to support the system LCD backlight control with OS and driver independent.

#### CN8: CRT/VGA Connector Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | RED | 2 | GND |
| 3 | GREEN | 4 | NC |
| 5 | BLUE | 6 | GND |
| 7 | NC | 8 | DDC_DATA |
| 9 | GND | 10 | GND |
| 11 | GND | 12 | HSYNC |
| 13 | GND | 14 | VSYNC |
| 15 | DDC_CLK | 16 | NC |

## CN7/CN17: Hirose Connector for LVDS Flat Panel

| Pin | Deception | Pin | Deception |
|---|---|---|---|
| 1 | VCCM | 2 | VCCM |
| 3 | VCCM | 4 | VCCM |
| 5 | D0- | 6 | D3- |
| 7 | D0+ | 8 | D3+ |
| 9 | GND | 10 | GND |
| 11 | D1- | 12 | CLK- |
| 13 | D1+ | 14 | CLK+ |
| 15 | GND | 16 | GND |
| 17 | D2- | 18 | GND |
| 19 | D2+ | 20 | GND |

## CN12: Hirose Connector for Inverter

| PIN | Description |
|---|---|
| 1 | 12VM |
| 2 | 5V |
| 3 | 12VM |
| 4 | ENAB |
| 5 | GND |

## 3.8 Floppy Disk Controller

The **SBC83810 Series** provides a 26-pin FCC Z.I.F. type connector, **CN25** for support of a single floppy drives. The floppy drive could be any one of the following types: 3.5" 720KB or 1.44MB/2.88MB.

### CN25: FDD Connector Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | +5V | 14 | STEP |
| 2 | INDEX | 15 | GND |
| 3 | +5V | 16 | WDATA |
| 4 | DRIVE0 | 17 | GND |
| 5 | +5V | 18 | WGATE |
| 6 | DSKCHG | 19 | GND |
| 7 | No connector | 20 | TRK0 |
| 8 | READY | 21 | GND |
| 9 | HDOUT | 22 | WPT |
| 10 | MOTOR ON | 23 | GND |
| 11 | No connector | 24 | RDATA |
| 12 | DIR | 25 | GND |
| 13 | HDSEL | 26 | SIDE0 |

## 3.9 Parallel Port Interface

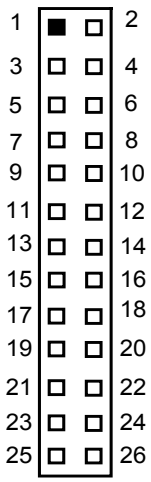
The **SBC83810 Series** has one onboard parallel port, LPT1. LPT1 has one 26-pin header connector. The onboard **PRN** of **SBC83810 Series** is a multi-mode parallel port supporting:

- **Standard mode:**
  IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port
- **Enhanced mode:**
  Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
- **High speed mode:**
  Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address selection of the onboard parallel port, in LPT1 (378H) or disabled, is configured within the BIOS CMOS setup utility.

### CN20: Parallel Port Connector Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Strobe# | 14 | Auto Form Feed# |
| 2 | Data 0 | 15 | Error# |
| 3 | Data 1 | 16 | Initialize# |
| 4 | Data 2 | 17 | Printer Select In# |
| 5 | Data 3 | 18 | GND |
| 6 | Data 4 | 19 | GND |
| 7 | Data 5 | 20 | GND |
| 8 | Data 6 | 21 | GND |
| 9 | Data 7 | 22 | GND |
| 10 | Acknowledge# | 23 | GND |
| 11 | Busy | 24 | GND |
| 12 | Paper Empty# | 25 | GND |
| 13 | Printer Select | 26 | No connector |



## 3.10 Serial Port Interface

The **SBC83810 Series** has four onboard serial ports, **COM1**, **COM2** and **COM3** are RS-232 and **COM2** is RS-232/422/485, jumper selectable with auto flow control features. All four ports feature +5V/12V power capability on DCD and RI, depending on the jumper setting.

### 3.10.1 Serial Ports IRQ Selection

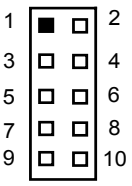
IRQ for **COM1** and **COM2** are selected on IRQ4 or IRQ3. Both ports can be enabled or disabled via BIOS setting. The IRQ for **COM3** and **COM4** is selected on 10 or 11 by BIOS setting.

### 3.10.2 Serial Ports Power Selection

The four COM ports have +5V power capability on DCD and +12V power capability for RI, depending on the jumper setting. (See Section 2.3.3). The RS-232 pin assignments are listed on the following table.

#### CN14, CN18, CN21, CN15: COM1, COM2, COM3, COM4 Serial Port 10-pin Connector Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Data Carrier Detect (DCD) | 2 | Data Set Ready (DSR) |
| 3 | Receive Data (RXD) | 4 | Request to Send (RTS) |
| 5 | Transmit Data (TXD) | 6 | Clear to Send (CTS) |
| 7 | Data Terminal Ready (DTR) | 8 | Ring Indicator (RI) |
| 9 | Ground (GND) | 10 | No connector |



**The RS-422/485 pin assignments for COM2 are listed below.**

| Pin # | Signal Name | |
|---|---|---|
| | R2-422 | RS-485 |
| 1 | TX- | DATA- |
| 2 | No connector | No connector |
| 3 | TX+ | DATA+ |
| 4 | No connector | No connector |
| 5 | RX+ | No connector |
| 6 | No connector | No connector |
| 7 | RX- | No connector |
| 8 | No connector | No connector |
| 9 | GND | GND |
| 10 | No connector | No connector |

## 3.11 Real Time Clock and CMOS RAM

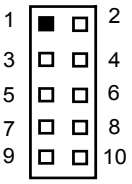
The **SBC83810 Series** contains 63000EB Integrated Real Time Clock (RTC) and 128 bytes of CMOS RAM. The CMOS RAM stores the system configuration information entered via the SETUP program. A battery keeps the stored information on the RTC and CMOS RAM active when system power is turned off.

## 3.12 Keyboard and PS/2 Mouse Connector

The **SBC83810 Series** provides a keyboard and PS/2 mouse interface. **CN10** is a pin-header connector for keyboard and PS/2 mouse connection.

**CN10**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | +5V | 2 | Keyboard Data |
| 3 | Keyboard Clock | 4 | Ground (GND) |
| 5 | +5V | 6 | +5V |
| 7 | Mouse Data | 8 | Mouse Clock |
| 9 | Ground (GND) | 10 | No connector |

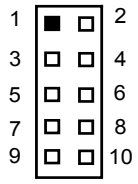


## 3.13 USB Connector

The **SBC83810 Series** features four Universal Serial Bus (USB) connectors as USB 2.0 compliant (480Mbps) that can adapt any USB peripherals, such as monitor, keyboard and mouse etc. The **SBC83810 Series** has two box-header connectors (**CN11/12**).

### CN11/12: USB Connector Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | D0- | 4 | D1- |
| 5 | D0+ | 6 | D1+ |
| 7 | Ground (GND) | 8 | Ground (GND) |
| 9 | Ground (GND) | 10 | Ground (GND) |

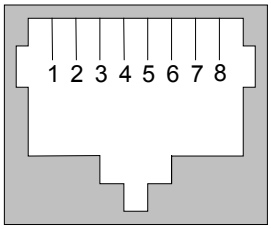



## 3.14 Ethernet RJ-45 Connector

The RJ-45 connector is used for Ethernet. To connect the **SBC83810** to a 100/10 Base-T hub, just plug one end of the cable into the **CN4** and connect the other end of the cable to a 1000/100/10-Base-T hub.

### CN4: RJ-45 Connector Pin Assignment

| Pin | Signal |
|---|---|
| 1 | TX+ (Data transmission positive |
| 2 | TX- (Data transmission negative) |
| 3 | Rx+(Data reception positive) |
| 4 | RJ45 termination |
| 5 | RJ45 termination |
| 6 | Rx- (Data reception negative) |
| 7 | RJ45 termination |
| 8 | RJ45 termination |

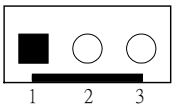



RJ-45

## 3.15 CPU and System Fan Connectors

**FAN1** and **FAN2** are CPU and system fan connectors. Pentium microprocessors require a fan for heat dispensing. The fan connector on **SBC83810 Series** provides power to the fan.

| Pin | Description |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | Sensor |




## 3.16 PC/104+ Connectors

The PC/104+ Plus is an industrial standard. It is a compact form factor with dimensions of 3.6" x 3.8" and is fully compatible with the PCI Bus. The PC/104+ interface are able to adapt off-the-shelf PC/104+ modules, such as sound module, fax modem module and multi-I/O module…etc.

## CN19: PC/104+ Bus Pin Assignment

| Pin# | Pin Name | Pin# | Pin Name | Pin# | Pin Name | Pin# | Pin Name |
|---|---|---|---|---|---|---|---|
| A1 | N.C | B1 | Reserved | C1 | +5V | D1 | AD0 |
| A2 | N.C | B2 | AD2 | C2 | AD1 | D2 | +5V |
| A3 | AD5 | B3 | GND | C3 | AD4 | D3 | AD3 |
| A4 | C/BE0# | B4 | AD7 | C4 | GND | D4 | AD6 |
| A5 | GND | B5 | AD9 | C5 | AD8 | D5 | GND |
| A6 | AD11 | B6 | N.C | C6 | AD10 | D6 | M66EN |
| A7 | AD14 | B7 | AD13 | C7 | GND | D7 | AD12 |
| A8 | +3.3V | B8 | C/BE1# | C8 | AD15 | D8 | +3.3V |
| A9 | SERR# | B9 | GND | C9 | SB0# | D9 | PAR |
| A10 | GND | B10 | PERR# | C10 | +3.3V | D10 | SDONE |
| A11 | STOP* | B11 | +3.3V | C11 | LOCK# | D11 | GND |
| A12 | +3.3V | B12 | TRDY# | C12 | GND | D12 | DEVSEL# |
| A13 | FRAME# | B13 | GND | C13 | IRDY# | D13 | +3.3V |
| A14 | GND | B14 | AD16 | C14 | +3.3V | D14 | C/BE2# |
| A15 | AD18 | B15 | +3.3V | C15 | AD17 | D15 | GND |
| A16 | AD21 | B16 | AD20 | C16 | GND | D16 | AD19 |
| A17 | +3.3V | B17 | AD23 | C17 | AD22 | D17 | +3.3V |
| A18 | IDSEL0 | B18 | GND | C18 | IDSEL1 | D18 | IDSEL2 |
| A19 | AD24 | B19 | C/BE3# | C19 | N.C. | D19 | IDSEL3 |
| A20 | GND | B20 | AD26 | C20 | AD25 | D20 | GND |
| A21 | AD29 | B21 | +5V | C21 | AD28 | D21 | AD27 |
| A22 | +5V | B22 | AD30 | C22 | GND | D22 | AD31 |
| A23 | REQ0# | B23 | GND | C23 | REQ1# | D23 | N.C. |
| A24 | GND | B24 | REQ2# | C24 | +5V | D24 | GNT0# |
| A25 | GNT1# | B25 | N.C | C25 | GNT2# | D25 | GND |
| A26 | +5V | B26 | CLK0 | C26 | GND | D26 | CLK1 |
| A27 | CLK2 | B27 | +5V | C27 | CLK3 | D27 | GND |
| A28 | GND | B28 | INTD# | C28 | +5V | D28 | RST# |
| A29 | +12V | B29 | INTA# | C29 | INTB# | D29 | INTC# |
| A30 | -12V | B30 | Reserved | C30 | Reserved | D30 | GND |

## 3.17 PICMG compliant PCI-X Connector

The **SBC83810 Series** provides a free PICMG compliant PCI slot for 64-bit/66MHz PCI-X and backward compatible to 32-bit/33MHz PCI device extension.

### PCI1: PICMG Slot Connector Pin Assignment

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| B1 | -12V | A1 | Reserved |
| B2 | Reserved | A2 | +12V |
| B3 | GND | A3 | Reserved |
| B4 | Reserved | A4 | Reserved |
| B5 | +5V | A5 | +5V |
| B6 | +5V | A6 | INTA# |
| B7 | INTB# | A7 | INTC# |
| B8 | INTD# | A8 | +5V |
| B9 | REQ3# | A9 | CLK_C |
| B10 | REQ1# | A10 | VIO |
| B11 | GNT3# | A11 | CLK_D |
| B12 | GND | A12 | GND |
| B13 | GND | A13 | GND |
| B14 | CLK_A | A14 | GNT1# |
| B15 | GND | A15 | RST# |
| B16 | CLK_B | A16 | VIO |
| B17 | GND | A17 | GNT0# |
| B18 | REQ0# | A18 | GND |
| B19 | VIO | A19 | REQ2# |
| B20 | AD31 | A20 | AD30 |
| B21 | AD29 | A21 | +3.3V |
| B22 | GND | A22 | AD28 |
| B23 | AD27 | A23 | AD26 |
| B24 | AD25 | A24 | GND |
| B25 | +3.3V | A25 | AD24 |

Continued . . . . .

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| B26 | CBE3# | A26 | IDSEL |
| B27 | AD23 | A27 | +3.3V |
| B28 | GND | A28 | AD22 |
| B29 | AD21 | A29 | AD20 |
| B30 | AD19 | A30 | GND |
| B31 | +3.3V | A31 | AD18 |
| B32 | AD17 | A32 | AD16 |
| B33 | CBE2# | A33 | +3.3V |
| B34 | GND | A34 | FRAME# |
| B35 | IRDY# | A35 | GND |
| B36 | +3.3V | A36 | TRDY# |
| B37 | DEVSEL# | A37 | GND |
| B38 | PCIXCAP | A38 | STOP# |
| B39 | LOCK# | A39 | +3.3V |
| B40 | PERR# | A40 | SDONE |
| B41 | +3.3V | A41 | SBO# |
| B42 | SERR# | A42 | GND |
| B43 | +3.3V | A43 | PAR |
| B44 | CBE1# | A44 | AD15 |
| B45 | AD14 | A45 | +3.3V |
| B46 | GND | A46 | AD13 |
| B47 | AD12 | A47 | AD11 |
| B48 | AD10 | A48 | GND |
| B49 | M66EN | A49 | AD09 |
| B52 | AD08 | A52 | CBE0# |
| B53 | AD07 | A53 | +3.3V |
| B54 | +3.3V | A54 | AD06 |
| B55 | AD05 | A55 | AD04 |
| B56 | AD03 | A56 | GND |
| B57 | GND | A57 | AD02 |
| B58 | AD01 | A58 | AD0 |
| B59 | VIO | A59 | VIO |
| B60 | ACK64# | A60 | REQ64# |
| B61 | +5V | A61 | +5V |

Continued . . . . .

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| B62 | +5V | A62 | +5V |
| B63 | Reserved | A63 | GND |
| B64 | GND | A64 | CBE7# |
| B65 | CBE6# | A65 | CBE5# |
| B66 | CBE4# | A66 | VIO |
| B67 | GND | A67 | PAR64 |
| B68 | AD63 | A68 | AD62 |
| B69 | AD61 | A69 | GND |
| B70 | VIO | A70 | AD60 |
| B71 | AD59 | A71 | AD58 |
| B72 | AD57 | A72 | GND |
| B73 | GND | A73 | AD56 |
| B74 | AD55 | A74 | AD54 |
| B75 | AD53 | A75 | VIO |
| B76 | GND | A76 | AD52 |
| B77 | AD51 | A77 | AD50 |
| B78 | AD49 | A78 | GND |
| B79 | VIO | A79 | AD48 |
| B80 | AD47 | A80 | AD46 |
| B81 | AD45 | A81 | GND |
| B82 | GND | A82 | AD44 |
| B83 | AD43 | A83 | AD42 |
| B84 | AD41 | A84 | VIO |
| B85 | GND | A85 | AD40 |
| B86 | AD39 | A86 | AD38 |
| B87 | AD37 | A87 | GND |
| B88 | VIO | A88 | AD36 |
| B89 | AD35 | A89 | AD34 |
| B90 | AD33 | A90 | GND |
| B91 | GND | A91 | AD32 |
| B92 | Reserved | A92 | Reserved |
| B93 | Reserved | A93 | GND |
| B94 | GND | A94 | Reserved |

## J1: Mini-PCI Connector Pin Assignment

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | TIP | 2 | RING |
| | KEY | | KEY |
| 3 | LAN_RD+ | 4 | LAN_TD+ |
| 5 | LAN_RD- | 6 | LAN_TD- |
| 7 | RJ45 termination | 8 | RJ45 termination |
| 9 | RJ45 termination | 10 | RJ45 termination |
| 11 | LAN_LED1+ | 12 | LAN_LED2+ |
| 13 | LAN_LED1- | 14 | LAN_LED2- |
| 15 | CHGND | 16 | RESERVED |
| 17 | INTB# | 18 | 5V |
| 19 | 3.3V | 20 | INTA# |
| 21 | RESERVED | 22 | RESERVED |
| 23 | GND | 24 | 3.3VAUX |
| 25 | CLK | 26 | RST# |
| 27 | GND | 28 | 3.3V |
| 29 | REQ# | 30 | GNT# |
| 31 | 3.3V | 32 | GND |
| 33 | AD31 | 34 | PME# |
| 35 | AD29 | 36 | RESERVED |
| 37 | GND | 38 | AD30 |
| 39 | AD27 | 40 | 3.3V |
| 41 | AD25 | 42 | AD28 |
| 43 | RESERVED | 44 | AD26 |
| 45 | C/BE3# | 46 | AD24 |
| 47 | AD23 | 48 | IDSEL |
| 49 | GND | 50 | GND |
| 51 | AD21 | 52 | AD22 |
| 53 | AD19 | 54 | AD20 |
| 55 | GND | 56 | PAR |
| 57 | AD17 | 58 | AD18 |
| 59 | C/BE2# | 60 | AD16 |
| 61 | IRDY# | 62 | GND |

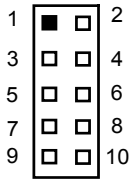
Continued . . . . .

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 63 | 3.3V | 64 | FRAME# |
| 65 | CLKRUN# | 66 | TRDY# |
| 67 | SERR# | 68 | STOP# |
| 69 | GND | 70 | 3.3V |
| 71 | PERR# | 72 | DEVSEL# |
| 73 | C/BE1# | 74 | GND |
| 75 | AD14 | 76 | AD15 |
| 77 | GND | 78 | AD13 |
| 79 | AD12 | 80 | AD11 |
| 81 | AD10 | 82 | GND |
| 83 | GND | 84 | AD09 |
| 85 | AD08 | 86 | C/BE0# |
| 87 | AD07 | 88 | 3.3V |
| 89 | 3.3V | 90 | AD06 |
| 91 | AD05 | 92 | AD04 |
| 93 | RESERVED | 94 | AD02 |
| 95 | 5V | 96 | AD00 |
| 97 | 5V | 98 | RESERVED |
| 99 | AD01 | 100 | RESERVED |
| 101 | GND | 102 | GND |
| 103 | AC_SYNC | 104 | M66EN |
| 105 | AC_SDATA_IN | 106 | AC_SDATA_OUT |
| 107 | AC_BITCLK | 108 | AC_ID0 |
| 109 | AC_ID1 | 110 | AC_RST# |
| 111 | RESERVED | 112 | RESERVED |
| 113 | RESERVED | 114 | GND |
| 115 | RESERVED | 116 | RESERVED |
| 117 | RESERVED | 118 | RESERVED |
| 119 | RESERVED | 120 | RESERVED |
| 121 | RESERVED | 122 | RESERVED |
| 123 | RESERVED | 124 | RESERVED |

## 3.18 Audio Connector

The **SBC83810VEA** supports audio interface. **CN5** is a 10pin-header connector commonly used for the audio.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | MIC-IN | 2 | GND |
| 3 | Line In L | 4 | GND |
| 5 | Line In R | 6 | GND |
| 7 | Audio Out L | 8 | GND |
| 9 | Audio Out R | 10 | GND |



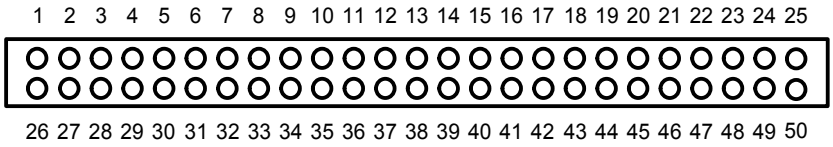

## 3.19 Compact Flash™ Socket (CN26)

The SBC83810 Series is equipped with a Compact Flash disk type-II socket on the solder side and it supports the IDE interface Compact Flash disk card with DMA mode supported. The socket itself is especially designed to prevent any incorrect installation of the Compact Flash disk card.

When installing or removing the Compact Flash disk card, please make sure that the system power is off.

The Compact Flash disk card is defaulted as the C: or D: disk drive in your PC system.

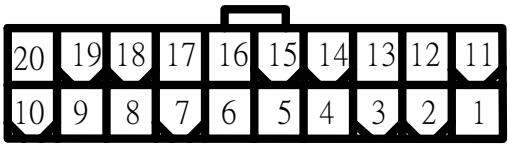
## CN26: Compact Flash Socket




| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | GND | 26 | CD1- |
| 2 | Data 3 | 27 | Data 11 |
| 3 | Data 4 | 28 | Data 12 |
| 4 | Data 5 | 29 | Data 13 |
| 5 | Data 6 | 30 | Data 14 |
| 6 | Data 7 | 31 | Data 15 |
| 7 | CS0# | 32 | CS1# |
| 8 | Address 10 | 33 | VS1# |
| 9 | ATASEL | 34 | IORD# |
| 10 | Address 9 | 35 | IOWR# |
| 11 | Address 8 | 36 | WE# |
| 12 | Address 7 | 37 | INTR |
| 13 | VCC | 38 | VCC |
| 14 | Address 6 | 39 | CSEL# |
| 15 | Address 5 | 40 | VS2# |
| 16 | Address 4 | 41 | RESET# |
| 17 | Address 3 | 42 | IORDY# |
| 18 | Address 2 | 43 | DMAREQ |
| 19 | Address 1 | 44 | DMAACK- |
| 20 | Address 0 | 45 | DASP# |
| 21 | Data 0 | 46 | PDIAG# |
| 22 | Data 1 | 47 | Data 8 |
| 23 | Data 2 | 48 | Data 9 |
| 24 | IOCS16# | 49 | Data 10 |
| 25 | CD2# | 50 | GND |

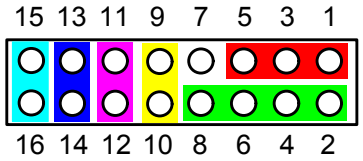
## 3.20 Pin Assignments of Other Connectors

### CN1: Power Connector Pin Assignment




| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | 3.3V | 2 | 3.3V |
| 3 | GND | 4 | 5V |
| 5 | GND | 6 | 5V |
| 7 | GND | 8 | PW_OK |
| 9 | 5VSB | 10 | 12V |
| 11 | 3.3V | 12 | -12V |
| 13 | GND | 14 | PS_ON |
| 15 | GND | 16 | GND |
| 17 | GND | 18 | -5V |
| 19 | 5V | 20 | 5V |

### CN13: Flat Panel Bezel Connector




### Power LED

This 3-pin connector, designated at ***Pins 1*** and ***5*** of ***CN13***, connects the system power LED indicator to its respective switch on the case. ***Pin 1*** is +, and ***pin 5*** is assigned as -. The Power LED lights up when the system is powered ON.

## External Speaker and Internal Buzzer Connector

***Pins 2, 4, 6,*** and ***8 of CN13*** connect to the case-mounted speaker unit or internal buzzer. ***Short pins 4-6*** when connecting the CPU card to an internal buzzer. When connecting an external speaker, set these jumpers to ***Open*** and install the speaker cable on ***pin 8*** (+) and ***pin 2*** (-).

## ATX Power On/Off Button

This 2-pin connector, designated at ***Pins 9*** & ***10*** of ***CN13***, connects the ATX power button of the front panel to the **SBC83810** CPU card - allowing user to control the power on/off state of the ATX power supply.

## System Reset Switch

***Pins 11*** & ***12*** of ***CN13*** connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

## HDD Activity LED

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. ***Pins 15*** & ***16 of CN13*** connect the hard disk drive and the front panel HDD LED. ***Pins 15*** is -, and ***pin 16*** is assigned as +.

## Keyboard Lock

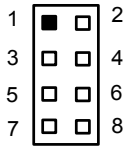
***Pins 13*** and ***14*** of ***CN13*** are Keyboard Lock setting. Short the ***Pins 13*** and ***14*** for Keyboard Lock.

## CN22: IrDA Connector Pin Assignment

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | HIRRX |
| 3 | IRRX |
| 4 | GND |
| 5 | IRTX |

## CN16: LAN LED Connector Pin Assignment

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | Active LED- | 2 | Active LED+ |
| 3 | Link100 LED- | 4 | Link 100 LED+ |
| 5 | Link10 LED- | 6 | Link 10 LED+ |
| 7 | Link 1000 LED- | 8 | Link 1000 LED+ |



# Chapter 4
# Award BIOS Utility

The Phoenix-Award BIOS has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in a battery-backed RAM (CMOS RAM) that retains the Setup information each time the power is turned off.

## 4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

**TO ENTER SETUP PRESS DEL KEY**

If the message disappears before you respond and you still wish to enter Setup, restart the system and try again. This is possible by turning the system power to OFF then to ON, pressing the "RESET" button on the system case, or by simultaneously pressing <Ctrl>, <Alt>, and <Del> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will be prompted with the following:

**PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP**

## 4.2 Control Keys

| | |
|---|---|
| Up arrow | Moves cursor to the previous item |
| Down arrow | Moves cursor to the next item |
| Left arrow | Moves cursor to the item on the left hand |
| Right arrow | Move to the item in the right hand |
| Esc key | Main Menu -- Quits and deletes changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exits current page and returns to Main Menu |
| PgUp/"+" key | Increases the numeric value or makes changes |
| PgDn/"–" key | Decreases the numeric value or makes changes |
| F1 key | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| (Shift) F2 key | Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward |
| F3 key | Reserved |
| F4 key | Reserved |
| F5 key | Restores the previous CMOS value from CMOS, only for Option Page Setup Menu |
| F6 key | Loads the default CMOS value from BIOS default table, only for Option Page Setup Menu |
| F7 key | Loads the Setup default, only for Option Page Setup Menu |
| F8 key | Reserved |
| F9 key | Reserved |
| F10 key | Saves all the CMOS changes, only for Main Menu |

## 4.3 Getting Help

- **Main Menu**
  The on-line description of the highlighted setup function is displayed at the bottom of the screen.

- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

## 4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.

**CMOS Setup Utility-Copyright © 2000-2004 Award Software**

| | |
|---|---|
| ► Standard CMOS Features | ► Frequency/Voltage Control |
| ► Advanced BIOS Features | Load Fail-Safe Defaults |
| ► Advanced Chipset Features | Load Optimized Defaults |
| ► Integrated Peripherals | Set Supervisor Password |
| ► Power Management Setup | Set User Password |
| ► PnP/PCI Configurations | Save & Exit Setup |
| ► PC Health Status | Exit Without Saving |
| Esc : Quit F9: Menu in BIOS ↑ ↓ → ← : Select Item<br>F10 : Save & Exit Setup | |
| F6 : SAVE CMOS TO BIOS | F7: LOAD CMOS FROM BIOS |
| Time, Date, Hard Disk Type... | |

**NOTE:** *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

## 4.5 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

**CMOS Setup Utility-Copyright © 2000-2004 Award Software**
**Standard CMOS Features**

| | | |
|---|---|---|
| Date (mm:dd:yy) | Thu, Jan 10 2002 | Item Help |
| Time (hh:mm:ss) | 2 : 31 : 24 | |
| | | Menu Level ▶ |
| ▶ IDE Primary Master | | |
| ▶ IDE Primary Slave | | Change the Day, month, Year and Century |
| ▶ IDE Secondary Master | | |
| ▶ IDE Secondary Slave | | |
| Drive A | 1.44M, 3.5 in. | |
| Drive B | None | |
| Video | EGA/VGA | |
| Halt On | All, But Keyboard | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

| | |
|---|---|
| day | The day of week, from Sun to Sat, determined by the BIOS, is read only |
| date | The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key |
| month | The month, Jan through Dec. |
| year | The year, depends on the year of BIOS |

- **Time**
  The time format is <hour> <minute> <second> accepting either functions key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **Primary Master/Primary Slave/Secondary Master/Secondary Slave**

  The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 users definable types are for Enhanced IDE BIOS. Type 1 to Type 45 is predefined. Type User is user-definable.

  Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

  If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

  If the controller of HDD interface is ESDI, select "Type 1".
  If the controller of HDD interface is SCSI, select "None".
  If the controller of HDD interface is CD-ROM, select "None".

| | | | |
|---|---|---|---|
| CYLS. | number of cylinders | LANDZONE | landing zone |
| HEADS | number of heads | SECTORS | number of sectors |
| PRECOMP | write precom | MODE | HDD access mode |

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A type/Drive B type**

  The category identifies the types of floppy disk drive A or drive B installed in the computer.

| | |
|---|---|
| None | No floppy drive installed |
| 360K, 5.25 in | 5.25 inch PC-type standard drive; 360Kb capacity |
| 1.2M, 5.25 in | 5.25 inch AT-type high-density drive; 1.2MB capacity |
| 720K, 3.5 in | 3.5 inch double-sided drive; 720Kb capacity |
| 1.44M, 3.5 in | 3.5 inch double-sided drive; 1.44MB capacity |
| 2.88M, 3.5 in | 3.5 inch double-sided drive; 2.88MB capacity |

- **Halt On**

  This field determines whether the system will halt if an error is detected during power up.

| | |
|---|---|
| No errors | The system boot will halt on any error detected. (default) |
| All errors | Whenever the BIOS detect a non-fatal error, the system will stop and you will be prompted. |
| All, But Keyboard | The system boot will not stop for a keyboard error; it will stop for all other errors. |
| All, But Diskette | The system boot will not stop for a disk error; it will stop for all other errors. |
| All, But Disk/Key | The system boot will not stop for a keyboard or disk error; it will stop for all other errors. |

## 4.6 Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

**CMOS Setup Utility-Copyright © 2000-2004 Award Software**
**Advanced BIOS Features**

| | | |
|---|---|---|
| CPU Feature | Press Enter | Item Help |
| Hard Disk Boot Priority | Press Enter | |
| Virus Warning | Disabled | Menu Level ► |
| CPU L1 & L2 Cache | Enabled | |
| CPU L2 Cache | Enabled | |
| Quick Power On Self Test | Enabled | |
| First Boot Device | HDD-0 | |
| Second Boot Device | Floppy | |
| Third Boot Device | SCSI | |
| Boot Other Device | Enabled | |
| Swap Floppy Drive | Disabled | |
| Boot Up Floppy Seek | Enabled | |
| Boot Up NumLock Status | On | |
| Gate A20 Option | Fast | |
| Typematic Rate Setting | Disabled | |
| Typematic Rate (Chars/Sec) | 6 | |
| Typematic Delay (Msec) | 250 | |
| Security Option | Setup | |
| APIC Mode | Enabled | |
| PS/2 Mouse Function Control | Enabled | |
| OS Select for DRAM >64MB | Non-OS2 | |
| Report No FDD For WIN 95 | No | |
| Full Screen Logo Show | Disabled | |
| Small Screen Show | Disabled | |
| Summary Screen Show | Enabled | |
| Display board ID | Disabled | |
| ↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help<br>F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

- **Hard Disk Boot Priority**
  This item can select boot device priority.

- **Virus Warning**
  This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is *"Disabled"*.

| *! WARNING !* |
|---|
| *Disk boot sector is to be modified*<br>*Type "Y" to accept write or "N" to abort write*<br>*Award Software, Inc.* |

| | |
|---|---|
| Enabled | Activates automatically when the system boots up causing a warning message to appear when there is an attempt to access the boot sector or hard disk partition table. |
| Disabled | No warning message will appear when attempts to access the boot sector or hard disk partition table are made. |

**NOTE:** *This function is only available with DOS and other operating systems that do not trap INT13.*

- **CPU L1 & L2 Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs with no built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

| | |
|---|---|
| Enabled | Enable cache |
| Disabled | Disable cache |

- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

| | |
|---|---|
| Enabled | Enable Quick POST |
| Disabled | Normal POST |

- **First/Second/Third Boot Device**
  These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is ***Enabled***.

- **Swap Floppy Drive**
  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swap floppy drive assignments so that Drive A becomes Drive B, and Drive B become Drive A. By default, this field is set to *Disabled*.

- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

| | |
|---|---|
| Enabled | BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drives type as they are all 80 tracks. |
| Disabled | BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K. |

-

- **Boot Up NumLock Status**
  This option enables and disables the number lock function of the keypad. The default value is *"On"*.

| | |
|---|---|
| On | Keypad functions confine with numbers |
| Off | Keypad functions convert to special functions (i.e., left/right arrow keys) |

- **Gate A20 Option**
  The default value is *"Fast"*.

| | |
|---|---|
| Normal | The A20 signal is controlled by keyboard controller or chipset hardware. |
| Fast | Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method. |

- **Typematic Rate Setting**
  This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

| | |
|---|---|
| Enabled | Enable typematic rate and typematic delay programming |
| Disabled | Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard. |

- **Typematic Rate (Chars/Sec)**
  This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

| | |
|---|---|
| 6 | 6 characters per second |
| 8 | 8 characters per second |
| 10 | 10 characters per second |
| 12 | 12 characters per second |
| 15 | 15 characters per second |
| 20 | 20 characters per second |
| 24 | 24 characters per second |
| 30 | 30 characters per second |

- **Typematic Delay (Msec)**
  This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

| | |
|---|---|
| 250 | 250 msec |
| 500 | 500 msec |
| 750 | 750 msec |
| 1000 | 1000 msec |

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

| | |
|---|---|
| System | The system will not boot and access to Setup will be denied if the incorrect password is entered at the prompt. |
| Setup | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. |

**NOTE:** *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **OS Select for DRAM >64MB**
  This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2. The default value is *"Non-OS2"*.

- **Report No FDD For Win 95**
  This option allows Windows 95 to share IRQ6 (assigned to a floppy disk drive) with other peripherals in case the drive does not exist. The default setting is *"No"*.

## 4.7 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

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**Advanced Chipset Features**

| | | |
|---|---|---|
| DRAM Timing | By SPD | Item Help |
| CASs Latency Time | 2.5 | |
| Active to Recharge Delay | 7 | Menu Level ► |
| DRAM RAS# to CAS# Delay | 3 | |
| DRAM RAS# Recharge | 3 | |
| DRAM Data Integrity Mode | Non-ECC | |
| MGM Core Frequency | Auto Max 400/333MHz | |
| System BIOS Cacheable | Enable | |
| Video BIOS Cacheable | Disabled | |
| Memory Hole At 15M-16M | Disabled | |
| Delayed Transaction | Disabled | |
| Delay Prior to Thermal | 16 Min | |
| AGP Aperture Size (MB) | 64 | |
| Init Display First | Onboard | |
| ** On-Chip VGA Setting ** | | |
| On-Chip VGA | Enabled | |
| On-Chip Frame Buffer Size | 32MB | |
| Boot Display | Auto | |
| Panel Scaling | Auto | |
| Panel Number | 640 x480 | |
| ↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help<br>F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

- **SDRAM CAS latency Time**
  You can select CAS latency time in HCLKs 2, 3, or Auto. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

- **DRAM Data Integrity Mode**
  This option sets the data integrity mode of the DRAM installed in the system. The default setting is *"Non-ECC"*.

- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.

- **Video BIOS Cacheable**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

- **Video RAM Cacheable**
  Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.

- **Memory Hole at 15M-16M**
  You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The default value is *"Disabled"*.

- **Delayed Transaction**
  The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. The options available are *Enabled* and *Disabled*.

- **AGP Aperture Size (MB)**
  The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The options available are 4M, 8M, 16M, 32M, 64M, 128M and 256M.

## 4.8 Integrated Peripherals

This option sets your hard disk configuration, mode and port.

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**Integrated Peripherals**

| | | |
|---|---|---|
| ► On Chip IDE Device | Press Enter | |
| ► On Board Device | Press Enter | Menu Level ► |
| ► Superior Device | Press Enter | |
| Onboard LAN boot ROM | Disable | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

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**On Chip IDE Device**

| | | |
|---|---|---|
| IDE DMA transfer Access | Enabled | |
| On-Chip Primary PCI IDE | Enabled | Menu Level ► |
| IDE Primary Master PIO | Auto | |
| IDE Primary Master PIO | Auto | |
| IDE Primary Master UDMA | Auto | |
| IDE Primary Master UDMA | Auto | |
| On-Chip Primary PCI IDE | Enabled | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Master PIO | Auto | |
| | | |
| ** On-Chip Serial ATA Setting ** | | |
| SATA Mode | IDE | |
| On-Chip Serial ATA | Auto | |
| Serial ATA Port0 | Primary Master | |
| Serial ATA Port1 | Primary Master | |
| | | |
| IDE HDD Block Mode | Enabled | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

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**On board Device**

| | | |
|---|---|---|
| USB Controller | Enable | |
| USB 2.0 Controller | Enabled | Menu Level ► |
| USB Keyboard Support | Disabled | |
| USB Mouse Support | Disabled | |
| AC97 Audio | Auto | |
| Hance Rapid Watchdog | 0 | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

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**Super IO Device**

| | | |
|---|---|---|
| Onboard FDC Controller | Enabled | |
| Onboard Serial Port 1 | 3F8/IRQ4 | Menu Level ► |
| Onboard Serial Port 1 | 2F8/IRQ3 | |
| UART Mode Select | Normal | |
| Red, TxD Active | Hi,Lo | |
| IR Transmission Delay | Enabled | |
| UR2 Duplex Mode | Half | |
| Use IR Pins | IR-Rx2Tx2 | |
| Onboard Parallel Port | 378/IRQ7 | |
| Parallel Port Mode | SPP | |
| EPP Mode Select | EEP1.7 | |
| ECP Mode Use DMA | 3 | |
| ICH Serial Port 1 | 3E8 | |
| ICH Serial Port 1 Use IRQ | IRQ10 | |
| ICH Serial Port 2 | 2E8 | |
| ICH Serial Port 2 Use IRQ | IRQ11 | |
| PWRON after power fail | OFF | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The options available are Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

- **IDE Primary/Secondary Master/Slave UDMA**
  Ultra DMA 66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software support Ultra DMA 33/66/100, select Auto to enable BIOS support. The options available are Auto, Mode 0, Mode 1, and Mode 2.

- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

  **NOTE:** *Choosing Disabled for these options will automatically remove the IDE Primary Master/Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

- **USB Keyboard Support**
  Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

- **Init Display First**
  This item allows you to decide to active whether PCI Slot or AGP first. The options available are PCI Slot, AGP.

- **IDE HDD Block Mode**
  This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

- **POWER ON Function**
  This option allows users to select the type of power ON sequence for the system to follow. The default value is *"Button-Only"*.

| | |
|---|---|
| BUTTON-ONLY | Follows the conventional way of turning OFF system power (via power button). |
| Password | Upon selecting this option, the KB POWER ON Password line appears. Press <Enter> and you'll be prompted to enter and confirm a password of your choice.<br>After setting the password, succeeding attempts to power ON the system will result to null. For system to activate, user must input the password via keyboard then press <Enter>. |
| Hot KEY | This option is very similar with that of Password. Hot-key combinations range from Ctrl-F1 to Ctrl-F12. User may define this combination from the Hot key Power ON option. |

- **Onboard FDC Controller**
  Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.

- **Onboard Serial Port 1/Port 2**
  Select an address and corresponding interrupt for the first and second serial ports. The options available are 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

- **UART2 Duplex Mode**
  The second serial port offers these infrared interface modes:
  - **IrDA**
  - **ASKIR IrDA-compliant serial infrared port**
  - **Normal (default value)**

  **NOTE:** *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

  When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmittion delay will appear.

- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are EPP1.9, ECP, SPP, ECPEPP1.7, and EPP1.7.

- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port for use during ECP mode.

## 4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

**CMOS Setup Utility-Copyright © 1984-2001 Award Software**
**Power Management Setup**

| | | Item Help |
|---|---|---|
| ACPI function | Enabled | |
| ACPI Suspend Type | S1(POS) | |
| Power Management | Min Saving | |
| PM Control by APM | Yes | Menu Level ▶ |
| Video Off Method | V/H SYNC+Blank | |
| Video off After | Standby | |
| MODEM Use IRQ | 3 | |
| Suspend Mode | 1 Hour | |
| HDD Power Down | 15 Min | |
| Soft-Off by PWR-BTTN | Instant-Off | |
| CPU THRM-Throttling | 50.0% | |
| Wake-up by PCI card | Enabled | |
| PowerOn by Ring | Enabled | |
| Wake UP On LAN | Enabled | |
| USB KB Wake-Up From S3 | Disabled | |
| Resume by Alarm | Disabled | |
| Date (of Month) Alarm | 0 | |
| Time (hh:mm:ss) Alarm | 0:0:0 | |
| | | |
| ** Reload Global Timer Events ** | | |
| Primary IDE 0 | Disabled | |
| Primary IDE 1 | Disabled | |
| Secondary IDE 0 | Disabled | |
| Secondary IDE 1 | Disabled | |
| FDD,COM,LPT Port | Disabled | |
| PCI PIRQ[A-D]# | Disabled | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The options available are Enabled, Disabled.

- **Power Management**
  This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

| | |
|---|---|
| Max Saving | Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode. |
| User Define | Sets each mode individually. Select time-out periods in the PM Timers section, following. |
| Min Saving | Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive). |
| Disabled | Default value |

- **PM Control by APM**
  If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings. The default value is *"Yes"*.

| | |
|---|---|
| No | System BIOS will ignore APM when power managing the system |
| Yes | System BIOS will wait for APM's prompt before it enters any PM mode (i.e., DOZE, STANDBY or SUSPEND).<br>**Note:** If APM is installed or if there is a task running, even when the timer has timed out, the APM will not prompt the BIOS to put the system into any power saving mode! |

**NOTE:** *If APM is not installed, this option has no effect.*

- **Video Off Method**

  Determines the manner in which the monitor is blanked.

| | |
|---|---|
| V/H SYNC+Blank | Turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer |
| DPMS | Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values. |
| Blank Screen | System only writes blanks to the video buffer. |

- **Video Off After**

  As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank off. The default value is *"Standby"*.

| | |
|---|---|
| NA | System BIOS will never turn off the screen |
| Suspend | Screen off when system is in SUSPEND mode |
| Standby | Screen off when system is in STANDBY mode |
| Doze | Screen off when system is in DOZE mode |

**NOTE:** *Green monitors detect the V/H SYNC signals to turn off its electron gun*

- **Modem Use IRQ**

| | |
|---|---|
| 3, 4, 5, 7, 9, 10, 11, NA | For external modem, 3 or 4 will be used for card type modem. It is up to card definition. Default is 3. |

- **Doze Mode**

  After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all other devices still operate at full speed. The default value is *"Disabled"*.

| | |
|---|---|
| Disabled | System will never enter doze mode |
| 1/2/4/6/8/10/20/30/ 40 Min/1 Hr | Defines the continuous idle time before the system entering DOZE mode. |

- **Standby Mode**
  After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed. The default value is *"Disabled"*.

| | |
|---|---|
| Disabled | System will never enter STANDBY mode |
| 1/2/4/6/8/10/20/30/40 Min/1 Hr | Defines the continuous idle time before the system entering STANDBY mode.<br>If any item defined in (J) is enabled & active, STANDBY timer will be reloaded |

- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

| | |
|---|---|
| Disabled | System will never enter SUSPEND mode |
| 1/2/4/6/8/10/20/30/40 Min/1 Hr | Defines the continuous idle time before the system entering SUSPEND mode.<br>If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded |

- **HDD Power Down**
  After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active. The default value is *"Disabled"*.

| | |
|---|---|
| Disabled | HDD's motor will not power OFF. |
| 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 Min | Defines the continuous HDD idle time before the HDD enters power saving mode (motor OFF) |

- **Throttle Duty Cycle**
  When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs. The default value is *"62.5%"*.

- **VGA Active Monitor**
  When Enabled, any video activity restarts the global timer for Standby mode. The default value is *"Enabled"*.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

| | |
|---|---|
| Instant-Off | This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF |
| Delay 4 Sec. | Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once. |

- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.

- **IRQ 8 Break Suspend**
  You can turn on or off monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode. The default value is *"Disabled"*.

- **Reload Global Timer Events**
  When *Enabled*, an event occurring on each device listed below restarts the global time for Standby mode.

## 4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

**CMOS Setup Utility-Copyright © 1984-2001 Award Software**
**PnP/PCI Configurations**

| | | |
|---|---|---|
| Reset Configuration Data | Disabled | Item Help |
| | | Menu Level ► |
| Resources Controlled By | Auto (ESCD) | |
| ►IRQ Resources | Press Enter | Select Yes if you are using a Plug and play capable operating system select No if you need the BIOS to configure non-boot devices |
| PCI/VGA Palette Snoop | Disabled | |
| ↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help<br>F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

- **PNP OS Installed**
  Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is *"No"*.

- **Reset Configuration Data**
  Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.

- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

- **DMA Resources**
  When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

- **Memory Resources**
  This sub menu can let you control the memory resource.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

- **Assign IRQ For USB/VGA**
  Enable/Disable to assign IRQ for USB/VGA.

## 4.11 PC Health Status

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

**CMOS Setup Utility-Copyright © 1984-2001 Award Software**
**PC Health Status**

| | | |
|---|---|---|
| CPU Warning Temperature | Disabled | Item Help |
| Current GMCH Temperature | | |
| Current CPU Temp. | | Menu Level ► |
| Current System Temp. | | |
| Current FAN1 Speed | | |
| Current FAN2 Speed | | |
| Vcore | | |
| VTT | | |
| +3.3V | | |
| +5V | | |
| +12V | | |
| -12V | | |
| -5V | | |
| VBAT (V) | | |
| 5VSB (V) | | |
| Shutdown Temperature | Disabled | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **Current CPU Temperature**
  These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

- **Current FAN1/FAN2 Speed**
  These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

## 4.12 Frequency/Voltage Control

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

**CMOS Setup Utility-Copyright © 1984-2001 Award Software**
**Frequency/Voltage Control**

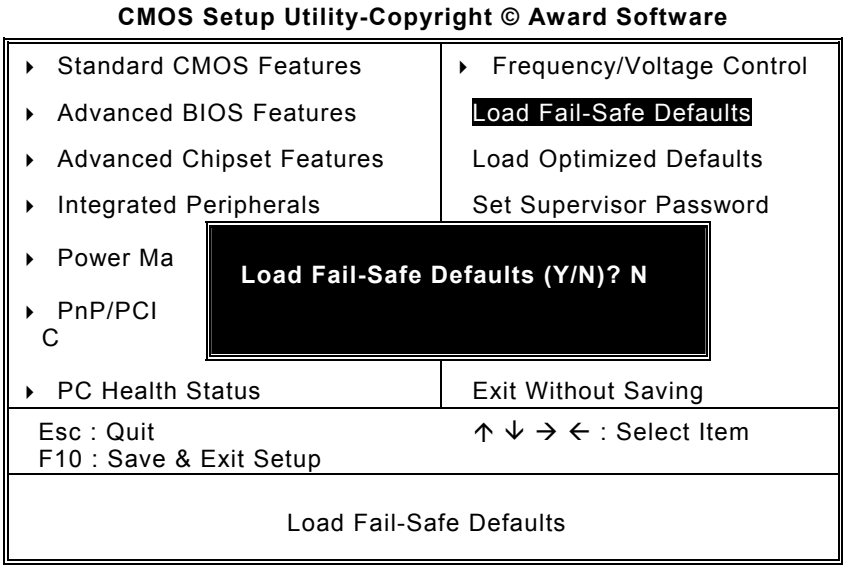
| | | |
|---|---|---|
| Auto Detect DIMM/PCI Clk | Enabled | Item Help |
| Spread Spectrum | [Disabled] | Menu Level ► |
| ↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help<br>F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

- **Auto Detect DIMM/PCI Clk**
  This item automatically detects the clock speeds of the system memory installed as well as the PCI interface. The options available are Enabled and Disabled. The default setting is ***Enabled***.

- **Speed Spectrum**
  This item directly relates to the EMI performance of the whole system. When enabled, all system clocks run at slower speeds thereby decreasing the electromagnetic interference to the surrounding environment. Disabling this item improves the system performance but simultaneously increase the EMI. The default setting is ***Disabled.***

## 4.13 Load Fail-Safe Defaults

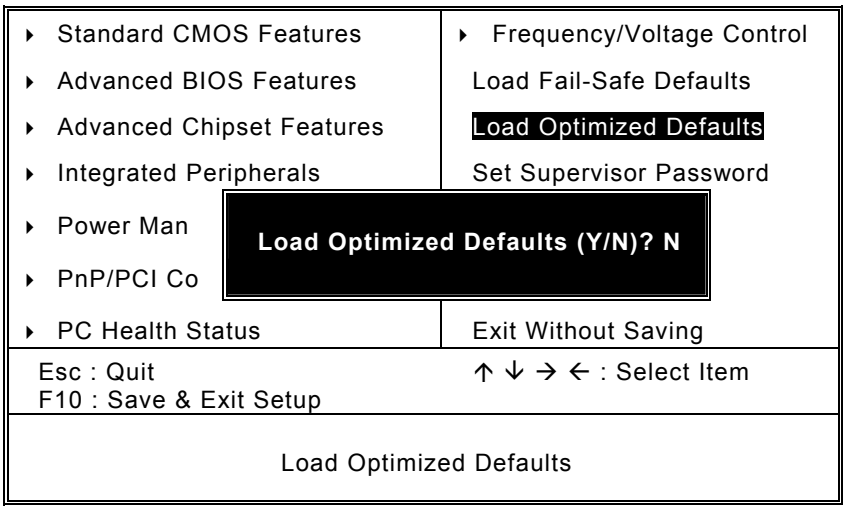
This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.




To load BIOS defaults value to CMOS SRAM, enter "Y". If not, enter "N".

## 4.14 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.




To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

## 4.15 Set Supervisor/User Password

You can set either supervisor or user password, or both of then. The differences between are:

1. **Supervisor password:** can enter and change the options of the setup menus.
2. **User password:** just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

**ENTER PASSWORD:**

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

**PASSWORD DISABLED.**

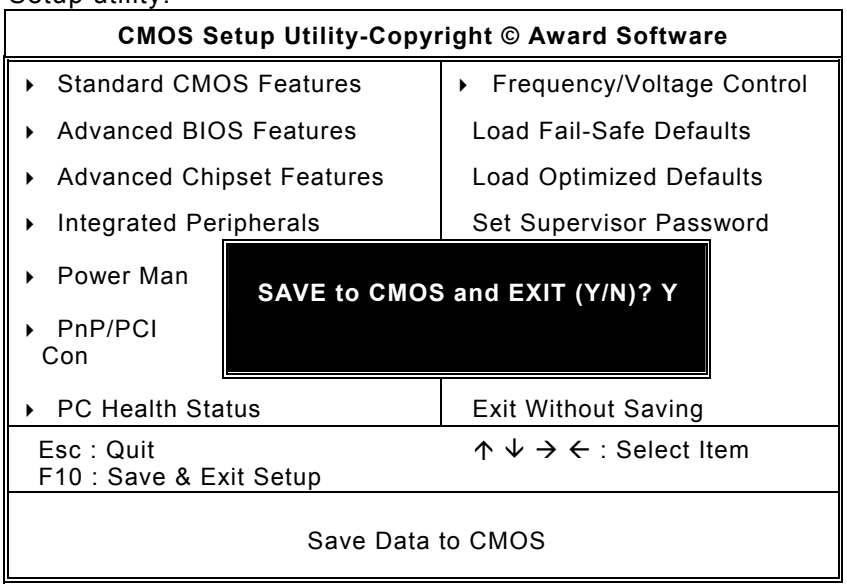
When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

Additionally when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

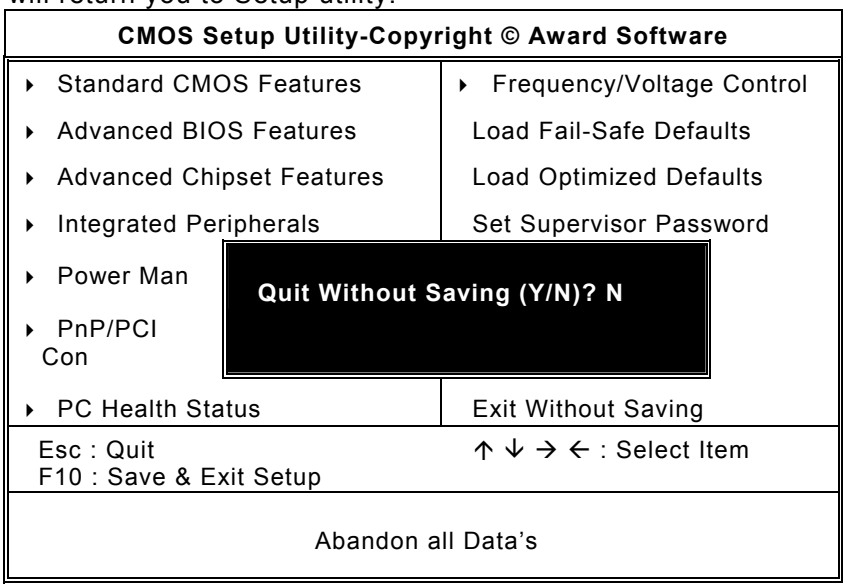
## 4.16 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.



## 4.17 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



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# Appendix A
# Watchdog Timer

## Watchdog Features

The Watchdog Timer (WDT) supports the following features and functions:
Selectable prescaler – approximately 1 MHz and approximately 1 KHz
33 MHz clock (30 ns clock ticks)
Multiple modes: WDT and free-running

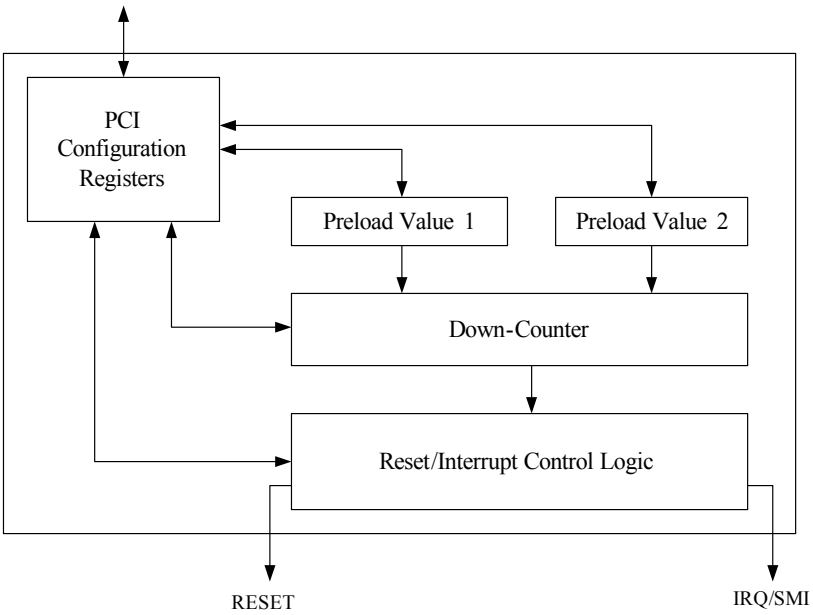
- **Free-running mode:**

One stage timer.
Toggles reset system after programmable time.
BIOS (Hance Rapid Item) can test this function, you can setup the time from 1~1024 sec. System enable timer after boot.

- **WDT Mode:**

Two stage timer:
1. First stage generates IRQ and SMI interrupt after programmable time.
2. Second stage reset system or inverts the previous value.
Used only after first timeout occurs.
Status bit preserved in RTC well for possible error detection and correction.Reset system when OUTPUT is enabled.
Timer may be disabled (default state) or locked (hard reset required to disable WDT). WDT automatic reload of preload value when WDT reload sequence is performed

## Watchdog Overview




The timer uses a 35-bit down-counter. The counter is loaded with the value from the first Preload register. The timer is then enabled and starts counting down. The time at which the WDT first starts counting down is called the first stage. When the host fails to reload the WDT before the 35-bit down-counter reaches zero, the WDT generates an internal interrupt. After the interrupt is generated, the WDT loads the value from the second Preload register into the WDT's 35-bit down counter and starts counting down. The WDT is now in the second stage. When the host still fails to reload the WDT before the second timeout, the WDT reset the system and sets the timeout bit (WDT_TIMEOUT). This bit indicates that the System has become unstable. The process of reloading the WDT involves the following sequence of writes:

**1. Write 80 to offset BAR + 0Ch.**
**2. Write 86 to offset BAR + 0Ch.**
**3. Write 1 to WDT_RELOAD in Reload Register.**

The same process is used for setting the values in the preload registers. The only difference exists in step 3. Instead of writing a '1' to the WDT_RELOAD, write the desired preload value into the corresponding Preload register. This value is not loaded into the 35-bit down-counter until the next time the WDT reenters the stage. For example, when Preload Value 2 is changed, it is not loaded into the 35-bit down-counter until the next time the WDT enters the second stage.

# Watchdog Control Sample

## Using the Watchdog Function

| Function | Reg. | Assembler |
|---|---|---|
| Setting Base Time | PCI Reg. 60h , bit 2<br>Bit2=0 ➔ 1ms (default)<br>Bit2=1 ➔ 1 us | Max. TimeVaule = 0FFFFFh * 1 ms<br>mov ebx,TimeValue |
| Read WDT BaseAdress | PCI Reg. 10h ~ 13h | mov eax,8000EC10h<br>mov dx,0cf8h<br>out dx,eax<br>mov dx,0cfch<br>in eax,dx<br>mov edi,eax ;; store BaseAddress to edi |
| WDT unlock | BaseAddress + 0Ch➔ 80h<br>BaseAddress + 0Ch ➔ 86h | push es ; backup es Reg.<br>xor ax,ax<br>mov es,ax<br>mov ax,8680h<br>mov es:[edi+0ch],al<br>mov es:[edi+0ch],ah |
| Set Timer Value | BaseAddress + 04h ~ 07h | mov es:[edi+04h],ebx<br>pop es ; restore es Reg. |
| Set Free Running mode | PCI Reg.68h, bit 3,2<br>Bit2=1, Free Running mode | mov eax,8000EC68h<br>mov dx,0cf8h<br>out dx,eax<br>mov dl,0fch<br>mov al,04h ;; Free Running mode<br>out dx,al |

## Reload Timer

| Function | Reg. | Assembler |
|---|---|---|
| WDT unlock | BaseAddress + 0Ch➔ 80h<br>BaseAddress + 0Ch ➔ 86h | push es ; backup es Reg.<br>xor ax,ax<br>mov es,ax<br>mov ax,8680h<br>mov es:[edi+0ch],al<br>mov es:[edi+0ch],ah |
| Reload Teimer | BaseAddress + 0Ah<br>Bit 8=1, reload timer value | mov ax,es:[edi+0ah]<br>or ax,0100h<br>mov es:[edi+0ah],ax<br>pop es ; restore es Reg. |

## Disable Timer

| Function | Reg. | Assembler |
|---|---|---|
| Enable WDT with Free Running mode | PCI Reg.68h, bit 3,2<br>Bit1=0, Disable WDT | mov eax,8000EC68h<br>mov dx,0cf8h<br>out dx,eax<br>mov dl,0fch<br>in al,dx<br>and al,0fdh ;; clear bit1<br>out dx,al |

## Enable Timer

| Function | Reg. | Assembler |
|---|---|---|
| Enable WDT with Free Running mode | PCI Reg.68h, bit 3,2<br>Bit1=1, Enable WDT | mov eax,8000EC68h<br>mov dx,0cf8h<br>out dx,eax<br>mov dl,0fch<br>in al,dx<br>or al,02h ;; set bit1<br>out dx,al |

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# Appendix B

# Serial ATA Setup Information

The board provides the last technology IDE connector. The two slim type connector of Serial ATA are for fast IDE data transfer. Nowadays the Serial ATA can provide the data transfer rate up to 150MB/sec. This is better than the traditional Parallel ATA (Ultra ATA/133) interface for 133MB/sec.

## Parallel ATA and Serial ATA BIOS Setup

**CMOS Setup Utility-Copyright © 1984-2001 Award Software**
**On Chip IDE Device**

| | | |
|---|---|---|
| IDE DMA transfer Access | Enabled | |
| On-Chip Primary PCI IDE | Enabled | Menu Level ► |
| IDE Primary Master PIO | Auto | |
| IDE Primary Master PIO | Auto | |
| IDE Primary Master UDMA | Auto | |
| IDE Primary Master UDMA | Auto | |
| On-Chip Primary PCI IDE | Enabled | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Master UDMA | Auto | |
| IDE Secondary Master UDMA | Auto | |
| | | |
| ** On-Chip Serial ATA Setting ** | | |
| SATA Mode | IDE | |
| On-Chip Serial ATA | Auto | |
| Serial ATA Port0 | Primary Master | |
| Serial ATA Port1 | Primary Master | |
| | | |
| IDE HDD Block Mode | Enabled | |

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

## On-Chip Serial ATA configuration

This option allows you to setup your Serial ATA work with the modes below:

- **Disable:**
  This will disable any Serial ATA Device.
- **Auto:**
  This will allow you to let the BIOS auto configure your IDE drivers if you don't know how to select the mode.
- **Combined Mode:**
  This will let you configure the Serial ATA and Parallel ATA enforced to max of 2 IDE devices on each Serial and Parallel ATA.
- **Enhance Mode:**
  This will allow you to enable the max 6 IDE drivers. (Notice! This mode only can work under Windows 2000/XP).
- **SATA Only Mode:**
  This allows you to force the Serial ATA work in legacy

## Serial ATA Port Mode

This option allows you to setup your Serial ATA work with the modes below:

- **IDE Mode:**
  On-Chip Serial ATA configuration.
- **RAID Mode:**
  Support Intel Software RAID

## Parallel ATA and Serial ATA Device Setup

The 6300ESB (Hance Rapids) has defined the device usage below:

- **New OS IDE mode:**
  6300ESB can work with up to 6 IDE Drivers under Windows 2000 or Windows XP.
- **Traditional OS IDE mode:**
  6300ESB can only work with up to 4 IDE Drivers under MS-DOS, Windows 98 or Windows ME, and Windows NT 4.0.

| Operating System | Parallel ATA | | Serial ATA | |
|---|---|---|---|---|
| | Primary (2 Devices) | Secondary (2 Devices) | SATA1 (1 Device) | SATA2 (1 Device) |
| Windows 2000/XP | Master/ Slave | Master/ Slave | SATA0 | SATA1 |
| Windows 98/NT/ME | Master/ Slave | NA | Secondary Master | Secondary Slave |
| | NA | Master/ Slave | Primary Master | Primary Slave |
| | Master/ Slave | Master/ Slave | NA | NA |